



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/686,866	10/16/2003	Chung Long Chang	24061. / TSMC2002-1305	7401
42717	7590	02/27/2006	EXAMINER	
HAYNES AND BOONE, LLP 901 MAIN STREET, SUITE 3100 DALLAS, TX 75202				CRANE, SARA W
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 02/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/686,866	CHANG ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Sara W. Crane	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 05 December 2005.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 2-13 and 19-25 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 2-13, 19-25 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morimoto.

With respect to claim 4, the cover figure of Morimoto shows a first electrode 5 over substrate 1, and first insulator 6, and second electrode 7, a second insulator 8, and a third electrode 9, where 15-3 and 15-4 are first and second interconnects higher than the third electrode. A first layer 14 extends from the first electrode to the first interconnect, a second layer 14 extends from the second electrode to the second interconnect, and a third layer 14 extends from the third electrode to the first interconnect. 12 is a third insulating layer. It would have been obvious to make the layers 14 as "vias," because the layers extend through holes in the insulator, and such holes are properly designated as vias because they provide a passage for conductor through the insulator.

Claims 5-13 and 19-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morimoto in view of Hieda, Papa Rao et al. and Balakumar et al.

With respect to claim 5, "dual damascene" designates a process of making, and such a process has not been shown to necessarily give rise to structure distinct from

that of Morimoto et al. With respect to claim 6, an etch stop layer would have been obvious for the reason such a layer is used in Balakumar figure 3, i.e., to allow the use of alternative dielectric layers which need to be protected from etchant. With respect to claims 7 and 8, Hieda shows in figures 1 and 2, for example, to make overlying electrodes within the perimeter of underlying electrodes, in order to allow room for multiple contacts to the lower layer. It would have been obvious to do the same in the Morimoto device. Papa Rao et al. also shows such a feature at 6 in figure 1B. Copper and aluminum would both have been obvious for conductors, because these materials are known for good conductivity. 6a and 22 in the Rao figure provide multiple layer for the lower electrode, obvious to allow for alternative contact arrangements as shown in this figure. Specific capacitances, as recited in for example claims 12 and 13, would have been obvious absent any showing of unexpected result, in order to implement circuits requiring such capacitances. With respect to claim 19, each of the references teaches the MIM capacitor for use in an active integrated circuit, requiring some sort of contact between the MIM and the transistor or transistors in the circuit. Such a contact for a Morimoto capacitor would have to be at one end of the capacitor, or at the other end, 15-3 or 15-4. Contact to 15-3, for example, would have been obvious in order to allow the capacitor device to be used in an integrated circuit.

### ***Conclusion***

Applicant's remarks with respect to the pending claims have been considered but are largely moot in view of the new grounds of rejection. Examiner considers a via to be

a hole or channel through an insulator, filled with conductor, as in the previous Office actions.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Crane, whose telephone number is (571) 272-1652.

The supervisor for Art Unit 2811, Eddie Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Sara W. Crane*  
Sara W. Crane  
Primary Examiner  
Art Unit 2811